AT a meeting of the electors to the Waynflete professorship of mineralogy, held at Magdalen College on December 13th, Mr. Henry A. Miers, M.A., Trinity College, was elected professor in the place of Prof. Story-Maskelyne, resigned. The emoluments of the professorship are £500 per annum, of which £400 is from Magdalen College and £100 from the University chest.

DISCUSSION AND CORRESPONDENCE.

AN EASY METHOD OF MAKING LINE DRAWINGS.

IT is often difficult to get satisfactory cuts of apparatus or of natural objects to illustrate scientific articles. A half-tone, although the easiest to get, is somewhat expensive and liable to be poorly printed, and, on account of its vagueness of outline, is in many cases not as good for scientific purposes as a half diagrammatic line drawing. To get a cheap cut that can be printed on a newspaper press the original photograph must be redrawn in lines and dots. But not everyone has the time and skill to make an accurate line drawing, while if the photograph is sent off to a professional draftsman the expense is about the same as for a half-tone, and the drawing frequently fails to bring out the very point to be illustrated.

A line drawing with the accuracy of a photograph can, however, be easily made in this way: photograph the object, take from the negative a pale blueprint, on the blueprint trace the outlines with as much detail as desired using a crowquill pen and waterproof ink, put the print in water containing a few drops of ammonia, when the blueprint will fade away leaving the black lines on white ground, wash and dry, make such alternation or additions as are required, and the drawing is ready for reproduction by the zinc etching or other process. Of course if the photograph is several times larger than the cut is to be, the reproduction will be neater.

E. E. SLOSSON.

UNIVERSITY OF WYOMING.

[We are glad to give space to the above, although the method has already been recommended. For an apparently new and in many cases better method cf. Prof. Hallock's note on page 761 of the present volume of SCIENCE. J. McK. C.]

THE MEASUREMENT OF COLORS.

EDITOR OF SCIENCE—*Sir:* Mr. J. W. Lovibond, of Salisbury, mentions in *Nature* that his system of Tintometer glasses is in constant use in many laboratories and manufactories for enabling one to record and to reproduce exactly at a future time any given color; and that the method is so simple that it can be carried out by any intelligent workman. Does anyone know whether these glasses are in use in this country, or whether they can be obtained here?

C. L. F.

SCIENTIFIC LITERATURE.

ON THE STRUCTURE OF PROTOPLASM.*

WHAT is the structure of the most marvelous known substance, protoplasm, 'the physical basis of life,' is a question that has long waited its final answer. Probably the best solution thus far given is that found by Prof. Bütschli in the work imperfectly represented in what follows:

That the watery, jelly-like material we find in the most actively living parts of all plants and animals has any discoverable structure is by no means self-evident, and it is only by slow, uncertain steps that the conception of a visible physical structure in this soft living matter has become generally accepted.

The idea that protoplasm is a structureless, homogeneous fluid early met opposition from many who observed here and there facts that pointed to the existence of apparently solid portions in the protoplasm of various cells.

Remak in 1837 found the axis cylinder of vertebrate nerve fibers made up of very minute fibrils. Frommann in 1867 supposed a fibrillar structure was common to all protoplasm. Striated structures were seen in ciliated cells and in gland cells, while Pflüger in 1869 found fibrillations in liver cells.

The fibrils were then seen to be connected in the form of a reticulum. Thus Küpffer in 1870 describes the living protoplasm of the follicle

*Untersuchungen über mikroskopische Schaüme und das Protoplasm. Von O. Bütschli. Leipzig. 1892. 229 pp., 6 pl.

Investigations on Microscopic Foams and on Protoplasm. O. Bütschli. London. Adam and Charles Black. 1894.